

REMARKS

The applicant has amended claims 1 and 17. Claims 1-17 are pending in the application. The amendments to claims 1 and 17 find support, for example, at page 3, lines 8-11, at page 10, lines 14-20, in U.S. Utility Patent Application Serial No. 10/256,391 (which was incorporated by reference within the subject application) at page 12, line 25 to page 13, line 9, at page 39, line 19 to page 40, line 7, and at page 40, lines 16-20. The amendment to claim 17, where the word "frame" is changed to "ring" finds antecedent basis within claim 17. Thus, no new matter has been introduced. Favorable reconsideration of this application is respectfully requested in light of the above amendments and the following detailed discussion.

Claim Rejections – 35 U.S.C. § 103

1. The Examiner has rejected claims 1-15 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Petri et al. (U.S. Patent No. 5,420,398, hereinafter Petri) or Mannuss et al. (U.S. Patent No. 5,489,764, hereinafter Mannuss) in view of Lanham et al. (U.S. Patent No. 6,037,574, hereinafter Lanham) or Button (U.S. Patent No. 3,610,888, hereinafter Button).

The Examiner asserts that Petri or Mannuss shows a heating assembly including a pan made of a metal, an insulating frame made of a dielectric material, a substrate made of a ceramic material further having a heating element disposed thereon, a temperature sensor, and a control system to regulate the electric current to the heating

element. The Examiner asserts that Petri further shows that the insulating frame is a ring, and Mannuss further shows the pan attached to the cooktop.

The Examiner admits that, however, neither Petri nor Mannuss shows the conductive coating disposed on the substrate with at least two bus bars contacting the conductive coating.

Further, the Examiner admits that Petri and Mannuss teach that the heating element that is disposed on the substrate can be made of a "thick-film resistor." The Examiner asserts that Lanham shows that it is well known to provide the "thick film" as a coating that is ink printed on a substrate with bus bars or leads applied to the end portions of the conductive coating to provide the electrical connection to a current source. The Examiner asserts that Button also shows that it is well known to provide a heating element in the form of a conductive coating made of the metal oxides on a substrate made of a borosilicate to provide a mechanically strong heating device with a good electrical conductivity. The Examiner asserts that Button also shows the bus bars applied to the conductive coating to provide the electrical connection.

The Examiner further alleges that, in view of Lanham or Button, it would have been obvious to one of ordinary skill in the art to adapt Petri or Mannuss with the conductive coating as an alternative heating element that forms the "thick-film" heater which provides a mechanically strong heating element in a high temperature setting.

The Examiner continues by asserting that with respect to claims 7, 8 and 12, it would have been obvious to one of ordinary skill in the art to apply the heating assembly

taught by Petri and Mannuss, as modified by Lanham or Button, in electrical heating devices including a warming drawer, bread warmer or any other heater devices since Petri and Mannuss leave it to one of ordinary skill to apply its heating assembly to many other electrical heating devices and, furthermore, their heating devices would also have been capable of being used as a warmer drawer, a bread warmer or countertop burners having the substantially same structure as that of the claimed structure.

The Examiner concludes by admitting that with respect to claim 11, while the claimed gap dimension between the substrate and cooktop is "not explicitly disclosed," a gap between the cooktop and substrate is shown in Mannuss. It would have been obvious to provide the claimed gap within the claimed range to allow the heating element to radiate heat to the cooktop as well as to provide the convection heat between the cooktop and the substrate, and the claimed range would have been obvious to keep an optimal heat transfer between the cooktop and the substrate without losing heat if and when such gap is too great.

The applicant, however, has amended independent claims 1 and 17 to require the limitations of a substrate having a major surface and a thin film conductive coating disposed thereon, wherein the substrate is attached to the insulating frame or ring, and at least two bus bars disposed on and in electrical contact with the thin film coating, the bus bars being capable of carrying electrical heating currents.

After studying the Petri, Mannuss, Lanham, and Button patents, the applicant can find nowhere in Petri, Mannuss, Lanham, or Button where these references teach a thin film coating being disposed on a major surface of a substrate.

Instead, the Examiner admits that Petri and Mannuss teach heating elements that are made of a "coil or a thick-film resistor", and that Lanham and Button teach "thick film coatings."

Since amended independent claims 1 and 17, and dependent claims 2-15 that depend from claim 1, require at least the above-stated limitations, then claims 1-15 and 17 are patentable over Petri or Mannuss in view of Button or Lanham, as the inventions defined thereby are not suggested within either Petri, Mannuss, Button, or Lanham, nor is there any suggestion or motivation to modify or combine these references' teachings in order to teach or suggest the claimed limitations, as required by 35 U.S.C. § 103.

Accordingly, the withdrawal of the rejection of claims 1-15 and 17, and the favorable reconsideration of dependent claims 1-15 and 17, are respectfully requested.

2. The Examiner has rejected claim 16 under 35 U.S.C. 103(a) as being unpatentable over "1-15 and 17" (sic, however, the applicant assumes that the Examiner meant, Petri or Mannuss in view of Button or Lanham) as applied to "claims" (the applicant assumes that the Examiner meant, claims 1-15 and 17) above, and further in view of Youtsey et al. (U.S. Patent No. 4,032,751, hereinafter Youtsey) or Oberle (U.S. Patent No. 6,194,692, hereinafter Oberle).

The Examiner asserts that Petri or Mannuss in view of Lanham or Button shows the heating assembly claimed except the bus bars made of copper.

However, the Examiner further asserts that Youtsey or Oberle shows that it is well known in the art to provide the bus bars or electrical terminals made of copper. The Examiner asserts that in view of Youtsey or Oberle, it would have been obvious to

one of ordinary skill in the art to adapt Petri or Mannuss, as modified by Lanham or Button, with the bus bars made of copper since such material is well known in the art to provide good electrical conductivity.

The applicant, however, asserts that since amended claim 1 is patentable over Petri or Mannuss in view of Lanham or Button, then claim 16, which depends from claim 1, is also patentable, at least on this basis. Also, as noted above, the Examiner admits that Petri or Mannuss in view of Lanham or Button does not disclose copper bus bars, which the applicant claims in claim 16.

In addition, the applicant has amended independent claims 1 and 17 to require at least the limitations of the bus bars being capable of carrying electrical heating currents.

After studying the Youtsey and the Oberle patents, the applicant can find nowhere in Youtsey or Oberle where Youtsey or Oberle overcome these shortcomings of Petri or Mannuss in view of Lanham or Button.

Instead, the applicant finds Youtsey utilizing "laminated metallic strips" 6 and 6' in a "carbonaceous pyropolymer layer" 4 (see, for example, column 5, line 61 to column 6, line 2). In other words, Youtsey is directed to laminated metallic strips within plastic layers, which are contrary to the claimed invention, where copper bus bars are disposed onto and in electrical contact with the thin film coating. The bus bars of the claimed invention require no lamination (see Fig. 1 of the subject application). In addition, polymer layers and adhesives would not be utilized in the manner of Youtsey to heat various items, as the claimed invention requires, since outgassing and volatile emissions from the polymer layers and adhesives would impart odors to the items being

heated, especially affecting the taste of food that would be warmed and/or cooked by the claimed invention.

Regarding Oberle, the applicant finds Oberle utilizing "metallic foil or ink" electrodes 18 "laminated" to a heating element 16 by an insulating layer 20 (see, for example, Fig. 2 and column 5, line 62 to column 6, line 6). In other words, Oberle is directed to laminated metallic foils or inks "within" layers, which are also contrary to the claimed invention, where copper bus bars are disposed onto and in electrical contact with the thin film coating. The bus bars of the claimed invention require no lamination (see, for example, Fig. 1 of the subject application).

The thermoplastic layers and adhesives of Oberle (see, for example, column 2, lines 29-32 and lines 40-44) would not be utilized to heat various items, as the claimed invention requires, since outgassing and volatile emissions from the thermoplastic layers and adhesives would impart odors to the items being heated, especially affecting the taste of food that would be warmed and/or cooked by the claimed invention.

In addition, it is known in the art that metal foil suppliers, like 3M Corporation of St. Paul, Minnesota, provide metal foils for "grounding and EMI (electro-magnetic interference) shielding in equipment, components, and shielded rooms," and to dissipate static electrical charge built up (see Exhibit A, which is attached hereto), as the applicant discloses in the present application. The applicant can find nowhere in the art where such metal foils are recommended by foil suppliers or others for carrying large electrical currents like those experienced in electrically heated glass applications.

It has been the applicant's experiences that the adhesives utilized by the metal foils deteriorate when large heating currents are applied to the metal foils in laminated glass applications (like Youtsey and/or Oberle) which results in electrical arcing. Also, the adhesives utilized by the metal foils evaporate when used in insulated glass applications which result in poor electrical connection and poor heating of the heated glass.

Although speculative, it appears to the applicant that Youtsey and/or Oberle may utilize the multiple layers and items (Youtsey 9, 10, 11, 12, and 13, and Oberle 11, 12, 14, 16, 20, and 22), which are contrary to the claimed invention, in an effort to postpone the above-stated reliability issues associated with the metal foils being utilized for heated glass current carrying applications.

Therefore, claim 16 is patentable over Petri or Mannuss in view of Button or Lanham and further in view of Youtsey or Oberle, as the inventions defined thereby are not suggested within either Petri, Mannuss, Button, Lanham, Youtsey, or Oberle, nor is there any suggestion or motivation to modify or combine these references' teachings in order to teach or suggest the claimed limitations, as required by 35 U.S.C. § 103.

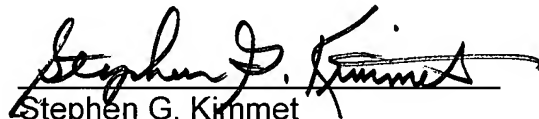
Consequently, the applicant respectfully submits that claim 16 should be allowed over Petri, Mannuss, Button, Lanham, Youtsey, or Oberle. Accordingly, withdrawal of the rejection of claim 16 and favorable reconsideration of claim 16 are respectfully requested.

CONCLUSION

For all the reasons described in the preceding paragraphs, the applicant respectfully submits that the present application is now in condition for allowance. Accordingly, a timely action to that end is courteously solicited.

If the Examiner has any remaining questions or concerns, or would prefer claim language different from that included herein, the favor of a telephone call to the applicant's attorneys is requested.

Respectfully submitted,


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